**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SAINT LAWRENCE COMMUNICATIONS LLC,	§	
	§	
	§	
Plaintiff,	§	**Case No. 2:16-cv-00082-JRG**
	§	
v.	§	**Jury Trial Demanded**
	§	
APPLE INC., AT&T MOBILITY LLC,	§	
and CELLCO PARTNERSHIP D/B/A	§	
VERIZON WIRELESS,	§	
	§	
Defendants.	§	
	§	
	§	
	§	

**PLAINTIFF SAINT LAWRENCE COMMUNICATIONS LLC'S
OPENING CLAIM CONSTRUCTION BRIEF**

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I.   INTRODUCTION

The five asserted patents were all originally assigned to VoiceAge Corporation, a leading contributor to the Adaptive Multi-Rate Wideband ("AMR-WB") audio coding standard. The AMR-WB standard is implemented worldwide in mobile devices manufactured by companies such as Samsung, Apple, Sony, Huawei, HTC, Motorola, LG and ZTE. All five patents have been declared essential to the AMR-WB standard, and many of the claim terms proposed by Defendants for construction are incorporated ***verbatim*** into the AMR-WB standard's technical specification. Because manufacturers and engineers rely upon the AMR-WB standard's technical specification to properly implement this standard, the claim terms at issue are well understood by those of ordinary skill in the art and need not be construed.

Despite the fact that the AMR-WB standard mirrors the claim language and that persons of ordinary skill in the art, including Defendants' engineers, readily understand and routinely implement these elements, Defendants contends that over 60 claim terms need to be construed. In order to streamline the briefing, conserve judicial resources and capitalize on this Court's familiarity with the patents and claim construction issues, the parties have agreed to a proposal that would incorporate the prior briefing and the Court's prior claim construction rulings from a set of related cases into the record of this case while preserving the parties' appellate rights. *See* Dkt. 93. Pursuant to the Court's order on this proposal (Dkt. 95), SLC's Opening Brief addresses only the remaining issues in dispute between the parties.

Defendants' constructions for the remaining disputed terms improperly import limitations that are not found in the claim language, the specifications or the prosecution histories. For instance, Defendants' proposed construction for the set of "wideband signal" terms risks reading out a preferred embodiment that down-samples a signal from 16,000 Hz to 12,800 Hz. Although

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the patents specify that such a down-sampled signal is still a wideband signal, Defendants' construction of "wideband" would read this signal out of the asserted claims.

For other terms, Defendants assert that the terms are indefinite, despite the fact that the specifications provide a person of ordinary skill in the art with reasonable certainty as to the meaning of the term. For these terms, Defendants cannot meet their burden of showing by clear and convincing evidence that the claim terms are indefinite.

In contrast to Defendants' constructions, SLC's proposed constructions are consistent with the plain meaning of the terms at issue and the intrinsic record. SLC respectfully requests that the Court reject Defendants' claim construction positions and adopt SLC's positions.

II.   OVERVIEW OF PATENTED TECHNOLOGY

All of the asserted patents in this case relate to the transmission of wideband speech signals. The wideband speech signals are encoded at a transmitter and then transmitted to a receiver where they are decoded for the enjoyment of the listener. Generally, the asserted patents discuss techniques for more efficiently transmitting wideband speech signals. The invention disclosed in each of the asserted patents is discussed in further detail in SLC's technical tutorial. *See also* Ogunfunmi Declaration (hereinafter "Decl.") ¶¶ 14-16.

III.   RELEVANT LEGAL STANDARDS

The purpose of claim construction is to resolve the meanings and technical scope of claim terms. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). Accordingly, claim construction begins with and "remain[s] centered on the claim language itself." *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004).

Claims are to be construed from the perspective of a person of ordinary skill in the art of the field of the patented invention at the time of the effective filing date of the patent application.

Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*). If commonly understood words are used in the claims, then the "ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314. "Elaborate interpretation" is not required. *Id.* To do otherwise would convert claim construction from "a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims," into "an obligatory exercise in redundancy." *U.S. Surgical*, 103 F.3d at 1568. Thus, "district courts are not (and should not be) required to construe every limitation present in a patent's asserted claims." *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

When an ordinary meaning is not apparent, the courts look to the language of the claims, the specification, prosecution history, and extrinsic evidence such as dictionaries and treatises. *Phillips*, 415 F.3d at 1314-18. Construction begins with the language of the claim, and the court "presume[s] that the terms in the claim mean what they say." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1360 (Fed. Cir. 2013) (citing *Phillips*, 415 F.3d at 1312). Also, "the context in which a term is used in the asserted claim can be highly instructive." *Phillips*, 415 F.3d at 1314; *see also Abtox, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed. Cir. 1997) ("[T]he language of the claim frames and ultimately resolves all issues of claim interpretation."). The prosecution history may also be helpful. *Phillips*, 415 F.3d at 1317. However, "it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* Extrinsic evidence may provide guidance in some circumstances, but should not be used to "change the meaning of the claims in derogation of the indisputable public records consisting of the claims, the specification and the prosecution history." *Id.* at 1319 (quotation marks omitted).

IV.   AGREED CONSTRUCTIONS AND CURRENT POSITION

The parties have agreed to the constructions for two claim terms, as specified in the parties' Amended Joint Claim Construction Statement. *See* Dkt. 99 at 2.

For purposes of this brief, and in view of the Court's order (*see* Dkt. 95), there are 7 terms remaining for construction in this case. *See* Dkt. 99 at Exs. A and B. Additionally, the parties have agreed to brief the threshold issue of whether certain terms are subject to 35 U.S.C. § 112(6). *See* Dkt. 93, Appx. B (terms 1–6) and Appx. C (terms 4 and 5). To the extent that the Court deems any of these terms subject to § 112(6), the parties have agreed to the corresponding structure, as reflected in their submitted proposal. *See id.* Appendix 1 to this brief summarizes the parties' positions regarding the proper construction of the disputed terms.

V.   THE SEVEN TERMS FOR CONSTRUCTION

A.   "[synthesized] [weighted] wideband [speech] signal"

SLC's Construction	Defendants' Construction
No construction is necessary. Alternatively: "a [synthesized] [weighted] [speech] signal that spans a wider bandwidth than traditional telephone signals and that has a frequency range of approximately 50-7000Hz"	"a [synthesized] [weighted] [speech] signal that spans a wider bandwidth than traditional telephone signals and that has a frequency range of 50-7000 Hz sampled at 16000 samples/sec"

The term "wideband signal" has been well-known and commonly-used by those of ordinary skill in the art for years and need not be construed. When the patent applications were

filed, the term "wideband signal" commonly appeared in technical publications[1] and patents.[2] The

asserted patents themselves also recognize that the term-of-art was in common usage by noting the

demand for "efficient digital wideband speech/audio encoding techniques." Ex. A, at 1:12–17.

The term "wideband" stands in contrast to the term-of-art "narrowband," which refers to traditional

telephone applications that filtered in the range of 200–3,400 Hz. *Id.* at 1:17–19.

In fact, the "WB" in the AMR-WB standard at issue in this case stands for "wideband,"

and this term is used throughout the specification. Defendants cannot argue that this term needs a

construction given that manufacturers and engineers—including Apple, AT&T and Verizon's own

engineers—routinely implement the AMR *wideband* standard without requiring any specific

definition. Because the term has a "widely accepted meaning" no construction is necessary and

the term should be given its plain and ordinary meaning. *See Phillips*, 415 F.3d at 1314.

Moreover, Defendants' construction is improper for at least two reasons: (1) a wideband

signal is not strictly limited to the range of 50–7000 Hz and the patents disclose wideband signal

ranges both higher and lower than 7000 Hz; and (2) defendants seek to apply the requirement that

the signal is sampled at 16,000 Hz to ***all*** variations of the wideband claim term—including

"synthesized wideband signal" and "weighted wideband signal"—without regard to the context of

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[1] *See e.g.,* P. Mermelstein, "G.722, A new CCITT Coding Standard for Digital Transmission of Wideband Audio Signals," *IEEE* Comm. Mag., Vol. 26, No. 1, pp. 8-15, Jan. 1988 (describing a standard applicable to wideband signals and discussing the frequency range of wideband audio signals compared to narrowband audio signals) (attached as Ex. D); Fuemmeler et. al, "Techniques for the Regeneration of Wideband Speech from Narrowband Speech," EURASIP Journal on Applied Signal Processing 2001:0, 1-9 (Sep. 2001) (noting that some work has already been done in the area of wideband speech regeneration) (attached as Ex. E); C.H. Ritz et. al., "Lossless Wideband Speech Coding," 10th Australian Int'l. Conference on Speech Science & Technology, p. 249 (Dec. 2004) (noting that wideband speech refers to speech sampled at 16 kHz and acknowledging existing research into wideband speech coding) (attached as Ex. F).
[2] *See, e.g.,* U.S. 5,581,652, filed Sep. 29, 1993 (titled: "Reconstruction of wideband speech from narrow band speech using codebooks) (Ex. G); U.S. 6,615169, filed Oct. 18, 2000 (titled: "High frequency enhancement layer coding in wideband speech codec") (Ex. H).

the claims or the disclosed embodiments. As discussed below, the patents specify that down-sampled signals, such as in the preferred embodiments, are still wideband signals.

A wideband signal is not ***strictly*** limited to the range of 50–7,000 Hz. For example, the `805 Patent discloses generating a noise signal in "the frequency range 5.6–7.2 kHz" that is then added to the synthesized speech signal to form the wideband speech signal at the output. Ex. A at 17:64-18:4. As a result, the outputted wideband signal would include frequencies in the range of 7.0–7.2 kHz (7,000–7,200 Hz). This is also reflected in the claims of the `802 Patent, which recite: "[a] decoder for producing a synthesized wideband signal as defined in claim 3, wherein said band-pass filter comprises a frequency bandwidth located between 5.6 kHz and 7.2 kHz." *See, e.g.*, Ex. C, at 21:10–13. In contrast to the above disclosures, Defendants' construction could be read to limit the range of a wideband signal to exactly 50–7,000 Hz.

Additionally, it is also the case that a wideband signal may be less than 7,000 Hz. For example, the `802 Patent describes an embodiment where the "input wideband signal is down-sampled from 16 kHz to around 12.8 kHz." *Id.* at 2:48–49 and claim 1 ("a wideband signal ***previously down-sampled*** during encoding"). "This reduces the number of samples in a frame, the processing time ***and the signal bandwidth below 7000 Hz***." *Id.* at 2:49–51 (emphasis added). This is due to a mathematical principle called the Sampling Theorem, which is well understood by persons of ordinary skill in the art.   Under the Sampling Theorem, the highest frequency component in a signal is equal to half of the sampling rate. For example, if a signal is sampled 8,000 times per second (or at 8 kHz), the maximum frequency component of that signal is 4 kHz. If the signal is sampled 16,000 times per second (or at 16 kHz), the maximum frequency component is 8 kHz. For the down-sampled signal discussed in the `802 Patent, because the wideband signal is down-sampled "from 16 kHz to around 12.8 kHz," the ***maximum*** frequency

component of that wideband signal would be around 6.4 kHz or 6,400 Hz.

In fact, Defendants' construction would read out any embodiment where the signal is down-sampled to a rate less than 14,000 times per second (or at 14 kHz), which under the Sampling Theorem would correspond to a maximum frequency of 7,000 Hz.   Because Defendants' construction would require a wideband signal to have "a frequency range of 50-7000 Hz," any signal that is sampled less than 14,000 times per second would presumably not be a wideband signal. This is directly contradicted by the asserted patents. As quoted above, the `802 Patent recites "a wideband signal *previously down-sampled* during encoding."   *Id.* at 19:58–59. However, Defendants' construction would read out the preferred embodiment, which down-samples "from 16 kHz to around 12.8 kHz." *Id.* at 2:48–49. Similarly, Defendants' construction would read out the "preferred embodiment of a *wideband* encoding device" illustrated in Figure 1 of the `524 Patent and shown below:
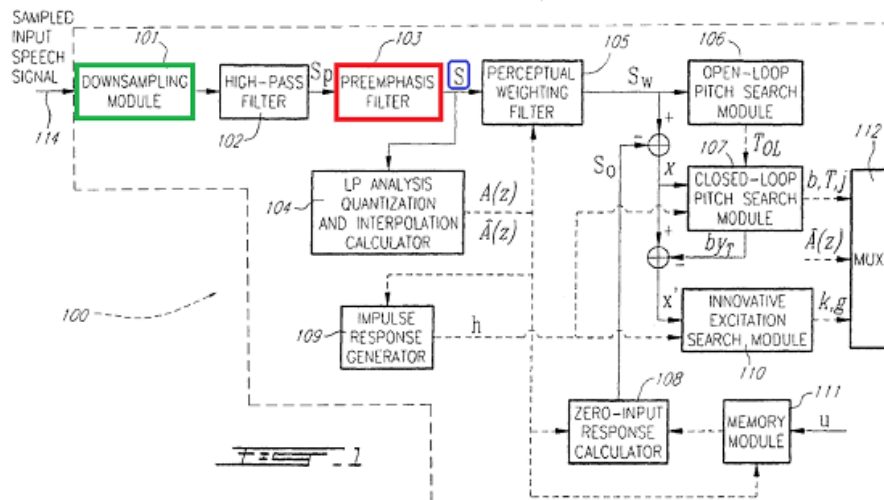
As shown in the above figure, the output of the "preemphasis filter" (shown in red) is the signal "S" (shown in blue), which the `524 Patent defines as the "*wideband signal* input speech vector (*after down-sampling*, pre-processing, and preemphasis)."  *Id.* at 7:2–3.  In contradiction to Defendants' construction, however, the `524 Patent discloses that in "downsampling module 101"

(shown in green) the signal is down-sampled "from 16 kHz down to 12.8 kHz," which would correspond to a maximum frequency of 6,400 Hz. *Id.* at 7:45–48. As a result, the preferred embodiment shown in Figure 1 discloses a wideband speech signal with a frequency range less than 7,000 Hz. This embodiment would be read out of the claims under Defendants' construction.

Defendants also improperly seek to apply the same 50–7,000 Hz range to ***all*** variations of the wideband claim term—including the terms "synthesized wideband signal" and "weighted wideband signal"—without regard to the context of the claims or the disclosed embodiments. For example, claim 1 of the `802 Patent discloses "filtering said excitation signal in relation to said linear prediction filter coefficients ***to thereby produce a synthesized wideband signal***." Ex. C at 20:5–7. The claim then recites "an oversampler responsive to said synthesized wideband signal ***for producing an over-sampled signal version of the synthesized wideband signal***." *Id.* at 20:7–10. As stated in the `802 Patent, in the preferred embodiment, "oversampling converts from the 12.8 kHz sampling rate to the original 16 kHz sampling rate." *Id.* at 17:51–52. As a result, in a preferred embodiment of claim 1, the "synthesized wideband signal" has a maximum frequency content of 6,400 Hz (6.4 kHz) under the Sampling Theorem described above due to it being previously down-sampled to a rate of 12,800 samples per second. This synthesized wideband signal is then "oversampled" back to 16,000 samples per second to produce the "over-sampled signal version of the synthesized wideband signal" recited in claim 1.

Similarly, for the term "weighted wideband signal," claim 8 of the `524 Patent recites a "method for producing a perceptually weighted signal in response to a wideband speech signal in order to reduce a difference between the weighted wideband speech signal and a subsequently synthesized weighted wideband speech signal." Ex. B at 19:5–9. However, the preferred embodiment of Figure 1 places the "perceptual weighting filter 105" ***after*** the "downsampling

module 101." *See id.* at Fig. 1. As a result, the "weighted wideband speech signal" in the preferred

embodiment was previously down-sampled "from 16 kHz down to 12.8 kHz," corresponding to a

maximum frequency of 6,400 Hz under the Sampling Theorem described above. *Id.* at 7:47–48.

For the above reasons, to the extent the Court seeks to construe this term, it should adopt

SLC's alternative construction, which specifies that the wideband signal has "a frequency range

of approximately 50-7000 Hz." SLC submits that this language is consistent with the patents.

For the same reasons discussed above, Defendants' addition of the phrase "sampled at

16000 samples/sec" is also improper. As cited above, the specification repeatedly refers to down-

sampled signals as being "wideband" signals. For example, the `802 Patent recites "a wideband

signal *previously down-sampled* during encoding." Ex. C at 19:58–59. However, Defendants'

requirement that the wideband signal be sampled at 16,000 Hz (or 16 kHz) could inadvertently

read out the preferred embodiment, which down-samples "from 16 kHz to around 12.8 kHz." *Id.*

at 2:48–49. Similarly, Defendants' construction would read out the "preferred embodiment of a

wideband encoding device" illustrated in Figure 1 of the `524 Patent (shown below):
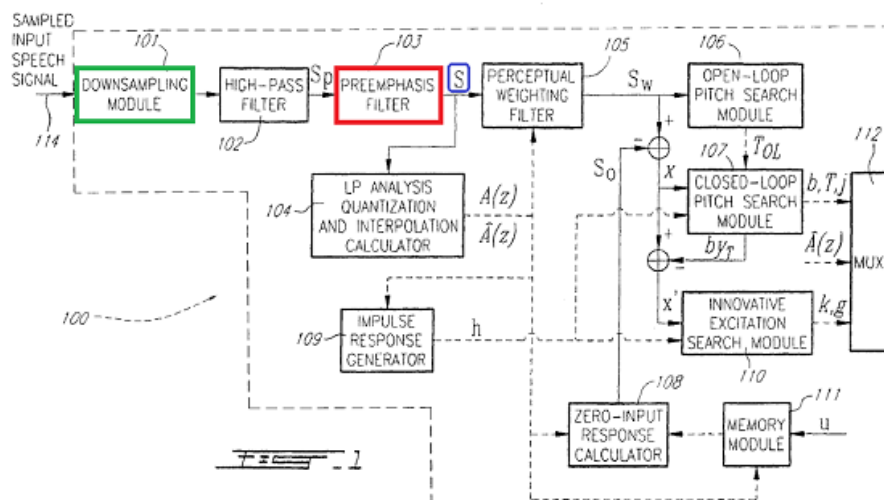
As explained above, the output of the "preemphasis filter" (shown in red) is the signal "S"

(shown in blue), which the `524 Patent defines as the "*wideband signal* input speech vector (*after*

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down-sampling, pre-processing, and preemphasis).” *Id.* at 7:2–3. However, in contradiction to Defendants' construction, the `524 Patent discloses that in “downsampling module 101” (shown in green) the wideband signal S is down-sampled “from 16 kHz down to 12.8 kHz.” *Id.* at 7:45–48. As a result, the wideband signal S in Figure 1 is sampled at 12,800 Hz—not 16,000 Hz. This preferred embodiment would be read out of the claims under Defendants' inclusion of the phrase “sampled at 16000 samples/sec.”

Similarly, the “synthesized wideband signal” term discussed above is sampled at 12,800 Hz. As explained above, claim 1 of the `802 Patent discloses “filtering said excitation signal in relation to said linear prediction filter coefficients ***to thereby produce a synthesized wideband signal***.” Ex. C at 20:5–7. The claim then recites “an oversampler responsive to said synthesized wideband signal ***for producing an over-sampled signal version of the synthesized wideband signal***.” *Id.* at 20:7–10. As stated in the `802 Patent, in the preferred embodiment, “oversampling converts ***from the 12.8 kHz sampling rate*** to the original 16 kHz sampling rate.” *Id.* at 17:51–52. As a result, the “synthesized wideband signal” of claim 1 is sampled at 12,800 Hz under the preferred embodiment. Defendants' construction not only reads out this embodiment but is incompatible with claim 1 and its “oversampler” element. If the “synthesized wideband signal” is sampled at 16,000 Hz—as required by Defendants' construction—then there would be no need to “oversample” that synthesized wideband signal from 12,800 Hz to 16,000 Hz.

The incompatibility of Defendants' construction with the claims is also illustrated by the term “weighted wideband signal” from claim 8 of the `524 Patent. Claim 8 recites a “method for producing a perceptually weighted signal in response to a wideband speech signal in order to reduce a difference between the weighted wideband speech signal and a subsequently synthesized weighted wideband speech signal.” Ex. B at 19:5–9. However, the preferred embodiment of

Figure 1 places the "perceptual weighting filter 105" **after** the "downsampling module 101." *See id.* at Fig. 1. As a result, the "weighted wideband speech signal" in the preferred embodiment was previously down-sampled "from 16 kHz down to 12.8 kHz." *Id.* at 7:47–48.

The Court should reject Defendants' construction and give the widely-known term-of-art "wideband signal" its plain and ordinary meaning. *See* Decl. ¶¶ 17-22. To the extent the Court seeks to construe the term, however, SLC respectfully submits that the Court should adopt SLC's construction, which more accurately defines the term in view of the specification and claims.

B.   "fixed denominator"

SLC's Construction	Defendants' Construction
No construction is necessary. Alternatively: "a denominator that does not vary in time with the LP parameters a_i"	"a denominator that does not vary in time"

Fixing the denominator of the perceptual weighting filter is specifically discussed in the AMR-WB standard, and as such, a person of ordinary skill in the art would readily understand the meaning of the term "fixed denominator" in the context of claims 1 and 8. Ex. J at SLC00000021. Accordingly, the term does not require any construction.

To the extent the Court seeks to construe the term, however, SLC respectfully submits that its construction more accurately quotes the relevant portions from the prosecution history. In response to an office action from the PTO, the patentees explained that the cited *Kroon* reference did not disclose a fixed denominator. The patentees noted that "[t]he denominator of the perceptual weighting filter of *Kroon* varies in time with the LP parameters a_i and accordingly is not fixed as required by claim 1 of the present patent application." Ex. K at SLFH00001618.

Although similar, Defendants' construction cuts out the last portion "with the LP parameters a_i," which risks altering the claim's full scope. Given the potential for confusion and the clear description from the prosecution history, SLC respectfully submits that its proposed

construction is preferable to the extent the Court seeks to construe this term.

C.   "A [device/method] for enhancing periodicity of an excitation signal produced in relation to a pitch codevector and an innovation codevector for supplying a signal synthesis filter in view of synthesizing a wideband speech signal"

SLC's Construction	Defendants' Construction
This term is the preamble to the claims of the `805 Patent and is not limiting.	"Preamble is limiting"

The above term is the preamble to claims 1 and 11 of the `805 Patent. In view of the relevant case law, SLC respectfully submits that the term is not limiting.

Under the law, a preamble is limiting only if "it recites essential structure or steps, or if it is necessary to give life, meaning and vitality to the claim." *See Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). "Conversely, a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention." *See id.*

Here, claims 1 and 11 of the `805 Patent contain similar elements and each define a structurally complete invention in the respective claim bodies.  Specifically, the claims recite "a factor generator for calculating a periodicity factor related to the wideband speech signal."  As explained in the `805 Patent, the periodicity factor reflects the amount of voicing in the signal. For example, the periodicity factor α "corresponds to a value of 0 for purely unvoiced signals and 0.25 for purely voiced signals." Ex. A at 15:35-36 (referring to the formula $\alpha = 0.125(1+r_v)$). The claims also recite "an innovation filter for filtering the innovative codevector in relation to said periodicity factor to thereby reduce energy of a low frequency portion of the innovative codevector and enhance periodicity of a low frequency portion of the excitation signal." With respect to this element, the `805 Patent specifies that "innovation filter 205 has the effect of lowering the energy of the innovative codevector c_k at low frequencies when the excitation signal u is more periodic, which enhances the periodicity of the excitation signal u at lower frequencies more than higher

frequencies." *Id.* at 14:26-30.   The patent goes on to provide two suggested forms for this innovation filter. *Id.* at 14:31-36 (disclosing the "[s]uggested forms for innovation filter 205").

Thus, applying the calculated periodicity factor to the disclosed innovation filter results in lowering the energy of the low frequency portion of the innovative codevector when the excitation signal is more periodic (*i.e.*, when the signal is more voiced).   This in turn enhances the periodicity of the low frequency portion of the excitation signal.   Or to state this another way, when a signal is more speech-like, the disclosed innovation filter will reduce the intensity of the noise in the lower frequencies for the innovative codevector, which enhances the periodicity of the excitation signal u and generally reduces the perception of distortion at the receiver.

In contrast, the preamble merely states the intended purpose of the invention: namely, enhancing the periodicity of a produced excitation signal in order to supply it to a signal synthesis filter that synthesizes a wideband speech signal.   Or in other words, the invention's purpose is to enhance the periodicity of the excitation signal so that it can be used later by a synthesis filter to synthesize a wideband speech signal.   For example, dependent claim 21 recites "a signal synthesis filter for filtering said periodicity enhanced excitation signal in relation to said synthesis filter coefficients to thereby produce said synthesized wideband speech signal."   Accordingly, the preamble does not recite essential structures or steps.   Rather, the patentees deliberately drafted dependent claims that incorporated this signal synthesis filter element.

In view of the above, SLC respectfully submits that the preamble is not limiting.

D.   "low frequency portion"

SLC's Construction	Defendants' Construction
No construction is necessary.	Indefinite.

In context, the claims of the `805 Patent recite an "innovation filter for filtering the innovative codevector in relation to said periodicity factor *to thereby reduce energy of a low*

frequency portion of the innovative codevector *and enhance periodicity of a low frequency portion* of the excitation signal." As explained below, the term "low frequency portion" is part of a "whereby clause" that does not actually limit the claims in which it appears. Surplus language may exist in some claims. *Innovative Display Tech., LLC v. Acer, Inc.*, Civ. No. 2:13-cv-522 Dkt. No. 101, 2014 WL 4230037, *28 (E.D. Tex, Aug. 26, 2014) (Payne, J.), objections overruled, Dkt. No. 219 (Dec. 15, 2014) (Gilstrap, J.) (citing *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1312 n.6 (Fed. Cir. 2008)). In particular, a "whereby" clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim. *Id.* (citing *Tex. Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1172 (Fed. Cir. 1993)).

In *Innovative Display*, the limitation at issue recited "sheet or substrate overlying at least a portion of one of the sides of the panel member to change the output distribution of the emitted light *such that the light will pass through a liquid crystal display with low loss*." This Court noted that the disputed portion of the limitation was "analogous to a whereby clause and [did] not limit the claims in which it appears" and rejected defendant's indefiniteness argument. *Id.* For the same reasons, the "low frequency portion" term is not a claim limitation and need not be construed. The term at issue appears in the following limitation:

> an innovation filter for filtering the innovative codevector in relation to said periodicity factor *to thereby* reduce energy of a low frequency portion of the innovative codevector and enhance periodicity of a low frequency portion of the excitation signal.

Ex. A at 18:23–27 (emphasis added). Accordingly, as in *Innovative Display*, the reduction in the energy and enhancement in periodicity of the low frequency portion of the codevector and excitation signal, respectively, merely state the result of applying the disclosed innovation filter and do not limit the claims in which they appear. *See In re Omeprazole Patent Litig.*, 536 F.3d 1361, 1370 (Fed. Cir. 2008) (refusing to read in a limitation where the term "enhanced stability"

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only referred to the intended result of the invention); *Endo Pharm. Inc. v. Watson Labs., Inc.*, Civ. No. 2:13-cv-192, 2014 WL 2859349, *4-10 (E.D. Tex. Jun. 23, 2014) (Gilstrap, J.) (concluding that a similar "thereby" clause which merely states an intended result is given no weight and need not be construed); *Vertical Computer Sys., Inc. v. Interwoven, Inc.*, Civ. No. 2:10-cv-490, 2013 WL 5202685, *11-12 (E.D. Tex. Sep. 16, 2013) (Gilstrap, J.) (holding that the phrase "a first set of executable instructions for creating arbitrary objects . . . said arbitrary objects being objects that ***can be created independently by individual preference***" recited a non-limiting whereby clause, which cannot lay predicate to a finding of indefiniteness).

Even if the Court concludes that the "low frequency portion" term limits the claims, Defendants have not met their burden of showing by clear and convincing evidence that a person of ordinary skill in the art would not have understood that term with reasonable certainty. The "low frequency portion" term relates to the output of the innovation filter. Accordingly, application of the innovation filters recited in the `805 Patent's specification would define the scope of the "low frequency portion" with reasonable certainty. *See, e.g.*, Ex. A at 14:30–38 (reciting "[s]uggested forms for innovation filter 205"). *See* Decl. ¶¶ 23-42.

E.   "high frequency content"

SLC's Construction	Defendants' Construction
No construction is necessary.	Indefinite

Functional language can only add a limitation to an apparatus claim if it "describes something about the structure of the apparatus rather than merely listing its intended or preferred uses." *Textron Innovations Inc. v. Am. Eurocopter Corp.,* 498 F. App'x 23, 28 (Fed. Cir. 2012); In this case, the phrase at issue is found in claim 1 of the `524 Patent, which recites "a signal preemphasis filter . . . ***for enhancing*** a high frequency content of a wideband speech signal." Ex. B at 18:29–32. Accordingly, the term "high frequency content" does not impose any structural

limitations on the preemphasis filter, and instead recites its intended use. As a result, the term "high frequency content" is not a limitation.

To the extent the Court concludes this term is a claim limitation, Defendants have not met their burden of showing by clear and convincing evidence that one of skill in the art would not understand the term with reasonable certainty. The "high frequency content" term refers to the output of the preemphasis filter, and the application of the preemphasis filter disclosed in the `524 Patent would define the scope of the "high frequency portion" with reasonable certainty.  *See* Ex. B at 7:66–8:9.  This applies equally to the term's usage in claim 8 of the `524 Patent, which recites "filtering the wideband speech signal to produce a preemphasized signal with enhanced high frequency content." The preemphasis filter disclosed in the `524 Patent is used to produce this preemphasized signal with enhanced high frequency content.

Moreover, a patent examiner is presumed to act from the viewpoint of a person of ordinary skill in the art. *In re Sang Su Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002). Statements by the examiner can inform how a person of ordinary skill in the art would interpret the claims. *Syneron Medical Ltd. v. Viora Ltd.*, Civ. No. 2:14-cv-639, 2015 WL 1952360, *17 (E.D. Tex. Apr. 9, 2015). When explaining the Reasons for Allowance of claims of the `802 Patent, the Examiner concluded:

> The instant application discloses a device for recovering a **high frequency content** of a wideband signal. Prior art references show similar methods but fail to teach "a signal fragmenting device for receiving an encoded version of a wideband signal previously down-sampled during encoding and extracting from said encoded wideband signal version at least pitch codebook parameters, innovative codebook parameters, and linear prediction filter coefficients.

Notice of Allowance dated August 9, 2006, Ex. I at 2. Not only did the Examiner understand the scope of the term "high frequency content," the Examiner reiterated it in the reasons for allowance. As a result, this term is not indefinite. *See* Decl. ¶¶ 43-49.

F.   "wherein γ2 is set equal to μ"

SLC's Construction	Defendants' Construction
No construction is necessary.	Indefinite

Defendants appear to content that the term "wherein γ2 is set equal to μ" from claims 7, 14, 21, 35 and 42 of the `524 Patent is indefinite due to the alleged lack of an antecedent basis for the value μ. However, this argument is incorrect.

Importantly, Defendants do not allege that all instances of the term "wherein γ2 is set equal to μ" in the `524 Patent are indefinite.  For example, claim 5 of the `524 Patent recites "[a] perceptual weighting device as defined in claim 4, wherein γ2 is set equal to μ." Defendants do not allege that claim 5 is indefinite, however. This is presumably because the patent makes it clear that μ is the preemphasis factor used in the preemphasis filter. *See* Claim 2 (stating that "wherein μ is a preemphasis factor having a value located between 0 and 1." Even though claim 5's dependent limitation is ***identical*** to claim 7's dependent limitation, Defendants presumably draw their distinction based on the fact that claim 5 is (indirectly) dependent on claim 2 whereas claim 7 is only (indirectly) dependent on claim 1.

In other words, Defendants take the odd position that a person of ordinary skill in the art would not understand what "μ" in claim 7 refers to—***even though*** the surrounding claims explicitly refer to it as the "preemphasis factor"—because claim 7 is not dependent on those other claims.

However, when construing a claim term, "[o]ther claims of the patent in question, both asserted and unasserted can also be valuable sources of enlightenment as to the meaning of a claim term. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). Here, the fact that there are identical claims that Defendants ***do not*** contend are indefinite should be dispositive of this issue. Defendants understand what "μ" means in the term "wherein γ2 is set equal to μ" from claim 5, and there is no reason why Defendants—or any person of ordinary skill in the art—would not

understand what "μ" means in the identical term "wherein γ2 is set equal to μ" from claim 7.

Additionally, the specification adequately defines what "μ" means in the term "wherein γ2 is set equal to μ." For example, the specification of the `524 Patent states that "the signal sp(n) is preemphasized using a filter having the following transfer function: $P(z)=1-\mu z^{-1}$ *where μ is a preemphasis factor* with a value located between 0 and 1." Ex. B at 7:67-8:5. As a result, a person of ordinary skill in the art would understand what the term "μ" means in view of the specification. The Court should reject Defendants' argument and hold the term to be definite.

G. "said excitation signal"

SLC's Construction	Defendants' Construction
No construction is necessary.	"the excitation signal produced by combining said pitch codevector and said innovative codevector in step (d)/[step (iv)]"

The term "said excitation signal" appears in claims 1, 9, and 25 of the `802 Patent. Defendants' construction does not seek to construe the term "excitation signal," which appears verbatim in Defendants' construction. Rather, Defendants' construction appears to construe the term "said" from this larger phrase. However, Defendants' construction is unnecessary in light of the existing claim language and fails to provide any meaningful guidance to the Jury. *See, e.g., UltimatePointer, L.L.C. v. Nintendo Co., Ltd.*, 2013 WL 2325118, *14 (E.D. Tex. May 28, 2013) ("Substituting 'separation' for 'distance' provides no meaningful guidance as to the meaning of the term. . . . Therefore, no construction is necessary for these terms.").

Claim 1 recites in part d, "a combiner circuit for combining said pitch codevector and said innovative codevector to thereby produce an excitation signal." Because Defendants' construction—at best—simply reorders much of this same language, SLC fails to understand why it would be helpful to the Jury. Indeed, Defendants' construction is even more problematic because it characterizes element d of claims 1 and 9 and element iv of claim 25 as "steps," which incorrectly

suggests to the Jury that these claims are method claims as opposed to system claims.

In light of the above arguments, SLC respectfully maintains that Defendants' construction is not helpful and only risks confusing the Jury.   Accordingly, the Court should give "said excitation signal" its plain and ordinary meaning.

VI.   THE ALLEGED MEANS-PLUS-FUNCTION TERMS

As provided in the parties' briefing proposal, there are 8 total claim terms that SLC contends are not subject to § 112(6) because they recite sufficient structure. Although two of these terms use the phrase "means for," they specify the particular algorithm to use. As a result, they should not be governed by § 112(6). For the remaining six terms, they do not use the phrase "means for" and Defendants cannot rebut the presumption that they are not governed by § 112(6).

To the extent the Court holds that these terms are subject to § 112(6), the parties have agreed to the corresponding structure, as explained in their briefing proposal. *See* Dkt. 93.

A. Two means-for terms that recite the specific algorithm.

Terms
means for comparing an innovative codebook gain g computed during encoding of the wideband signal to a threshold given by the initial modified gain from the past subframe g-1 as follows: and $\quad$ if $g < g - 1$ then $\quad$ $g0 = g*1.19$ $\quad$ bounded by $g0 \leq g - 1$ $\quad\quad$ if $g \geq g - 1$ then $\quad$ $g0 = g/1.19$ $\quad$ bounded by $g0 \geq g - 1$ (claims 35, 67 and 83 of the `123 Patent)
means for determing said smoothing gain through the following relation: gs = Sm*g0+(1-Sm)*g (claims 36, 68 and 84 of the `123 Patent)

Although a claim phrase that uses the word "means for" is presumed to be governed by § 112(6), "[t]his presumption collapses, however, if the claim itself recites sufficient structure, material, or acts to perform the claimed function." *Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1368 (Fed. Cir. 2005); *Micro Chem., Inc. v. Great Plains Chem., Co.,* 194 F.3d 1250, 1257

(Fed. Cir. 1999). For each of the two terms above, the claim itself recites the specific algorithm used to perform the recited function, and thus recites sufficient structure.

In computer-implemented inventions, it is required "that the structure disclosed in the specification be more than simply a general purpose computer or microprocessor." *EON Corp. IP Holdings LLC v. AT&T Mobility LLC*, 785 F.3d 616, 621 (Fed. Cir. 2015). Instead, the specification should "disclose an algorithm for performing the claimed function." *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1312 (Fed. Cir. 2012); *see also EON Corp.*, 785 F.3d at 621 ("It is well-established that the corresponding structure for a function performed by a software algorithm is the algorithm itself."). A patentee is permitted "to express that procedural algorithm in any understandable terms including as a ***mathematical formula***, in prose, or as a flow chart, ***or in any other manner that provides sufficient structure***." *Typhoon Touch Tech., Inc. v. Dell, Inc.*, 659 F.3d 1376, 1385 (Fed. Cir. 2011); *see also Noah Sys.*, 675 F.3d at 1312 (same). Because these two terms recite sufficient structure in the claim itself in the form of the disclosed algorithms, SLC respectfully submits that they are not subject to § 112(6).

B. Six remaining non-means-for terms.

Despite the fact that none of the above six terms use the phrase "means for," Defendants allege that each of these terms is subject to § 112(6). As discussed below, Defendants fail to rebut the presumption that the terms are ***not*** subject to § 112(6).

The importance of "the presence or absence of the word 'means'" to determine whether § 112(6) applies has been long recognized. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). The failure to use the word "means" creates a rebuttable presumption that § 112(6) does not apply. *Id.* This presumption can be overcome and § 112(6) applies if the challenger demonstrates that the claim term "fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function." *Id.* (citing *Watts*

v. XL Sys., Inc., 232 F.3d 877, 880 (Fed. Cir. 2000)).   Specifically, the standard is whether the

words of the claim are "understood by persons of ordinary skill in the art to have a sufficiently

definite meaning as the name for structure."   *Williamson*, 792 F.3d at 1348.   This analysis is

performed on the limitation as a whole, not a single word of the limitation. *Apotex Inc. v. Raritan*

Computer, Inc., 325 F.3d 1364, 1372 (Fed. Cir. 2003)

The six terms-at-issue do not use the word "means" and all of the terms in this group

"include substantial additional language describing the operation of the components at issue and

their interaction with other components." *Smartflash LLC v. Apple, Inc.*, 6:13-cv-447-JRG-KNM,

Dkt. No. 582 (E.D. Tex. Jul. 6, 2015).

Terms
spectral shaping unit for shaping the spectrum of the noise sequence in relation to linear prediction filter coefficients related to said down-sampled wideband signal (claims 1, 9 and 25 of the `802 Patent)
gain adjustment module, responsive to said white noise sequence and a set of gain adjusting parameters, for producing a scaled white noise sequence (claims 3, 11, 27 and 35 of the `802 Patent)
convolution unit for convolving the pitch codevector with a weighted synthesis filter impulse response signal (claims 5, 14, 32 and 41 of the `521 Patent)

For example, the "spectral shaping unit," "gain adjustment module," and "convolution

unit" terms above include substantial additional language that describe their operation and their

interaction with other elements.

As recited in the claim term itself, the "spectral shaping unit" shapes the spectrum of the

noise sequence in relation to a set of linear prediction filter coefficients related to the down-

sampled wideband signal. Moreover, other claims further specify that this "spectral shaping unit

comprises: (a) a gain adjustment module responsive to said white noise sequence and a set of gain

adjusting parameters, for producing a scaled white noise sequence; (b) a spectral shaper for filtering said scaled white noise sequence in relation to a bandwidth expanded version of the linear prediction filter coefficients to produce a filtered scaled white noise sequence characterized by a frequency bandwidth generally higher than a frequency bandwidth of said over-sampled synthesized signal version; and (c) a band-pass filter responsive to said filtered scaled white noise sequence for producing a band-pass filtered scaled white noise sequence to be subsequently injected in said over-sampled synthesized signal version as said spectrally-shaped white noise sequence." *See, e.g.*, claim 3 of the `802 Patent. Defendants cannot validly suggest that this "spectral shaping unit" element does not "include substantial additional language describing the operation of the components at issue and their interaction with other components." *Smartflash LLC v. Apple, Inc.*, 6:13-cv-447-JRG-KNM, Dkt. No. 582 (E.D. Tex. Jul. 6, 2015). As a result, this term should not be subject to § 112(6).

This also applies to the "gain adjustment module" term and the "convolution unit" term. As stated in the claim language itself, the "gain adjustment module" produces a scaled white noise sequence in response to a white noise sequence and a set of gain adjusting parameters. Similarly, as stated in the claim language itself, the "convolution unit" convolves the pitch codevector with the weighted synthesis filter impulse response signal. Convolution is a readily-understood mathematical operation known to persons of ordinary skill in the art. As a result, neither of these terms are subject to § 112(6).

Terms
signal fragmenting device for receiving an encoded wideband speech signal and extracting from said encoded wideband speech signal at least pitch codebook parameters, innovative codebook parameters, and synthesis filter coefficients
(claims 21 and 31 of the `805 Patent)

> signal fragmenting device for receiving an encoded version of a wideband signal previously down-sampled during encoding and extracting from said encoded wideband signal version at least pitch codebook parameters, innovative codebook parameters, and linear prediction filter coefficients
>
> (claims 1, 9 and 25 of the `802 Patent)

Similarly, the two "signal fragmenting device" terms above specifically recite receiving an encoded wideband signal and then extracting the different components of that signal that correspond to specific parameters, such as the pitch codebook parameters, the innovative codebook parameters, and the synthesis filter coefficients. As a result, these two terms have sufficient structural meaning and should not be governed by § 112(6).

> **Terms**
>
> pitch analysis device responsive to the pitch codevector for selecting, from said sets of pitch codebook parameters, the set of pitch codebook parameters associated to the signal path having the lowest calculated pitch prediction error
>
> (claim 10 of the `521 Patent)

Lastly, the "pitch analysis device" term similarly includes substantial additional language describing the operation of the components at issue and their interaction with other components. Namely, as stated in the claim term itself, the "pitch analysis device" selects, among a set of pitch codebook parameters, the set of pitch codebook parameters that correspond to the signal path that has the lowest calculated pitch prediction error. As a result, the claim term describes how it operates and what it considers in making its selection. Accordingly, SLC respectfully submits that this claim term is not subject to § 112(6).

Because none of the six terms in this group are subject to the requirements of § 112(6), all of these terms should be given their plain and ordinary meaning.

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VII.   CONCLUSION

SLC respectfully requests that the Court adopt its claim construction positions. With

respect to the terms that Defendants allege are indefinite, Defendants cannot meet their burden of

showing indefiniteness with clear and convincing evidence. For the remaining terms, SLC

respectfully submits that no construction is necessary, or in the alternative, that its proposed

constructions more accurately convey the meaning of the underlying term in view of the patent

claims, specifications, and prosecution histories.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system per Local Rule CV-5(a)(3) on December 2, 2016.

*/s/ Demetrios Anaipakos*_____
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